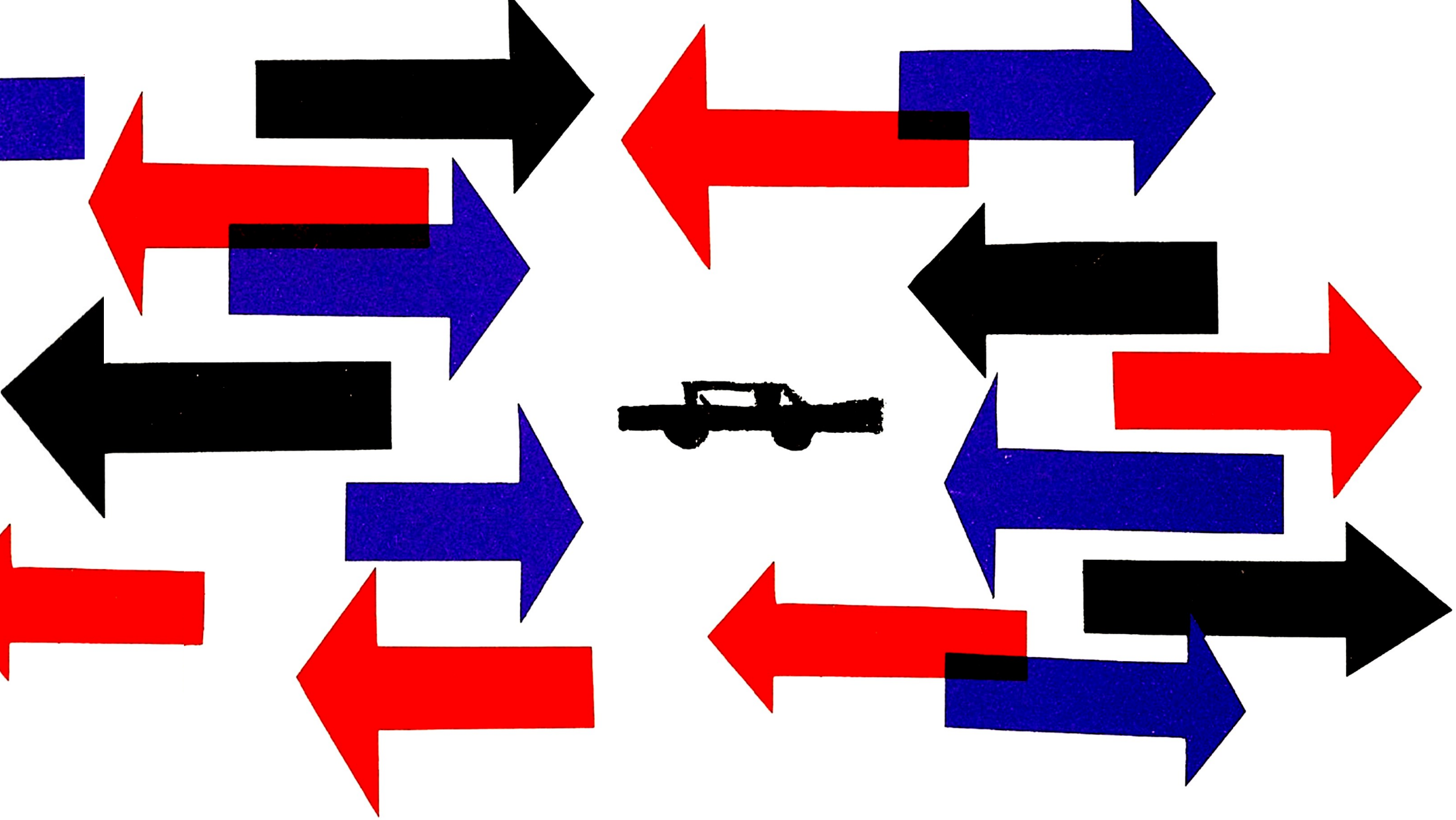
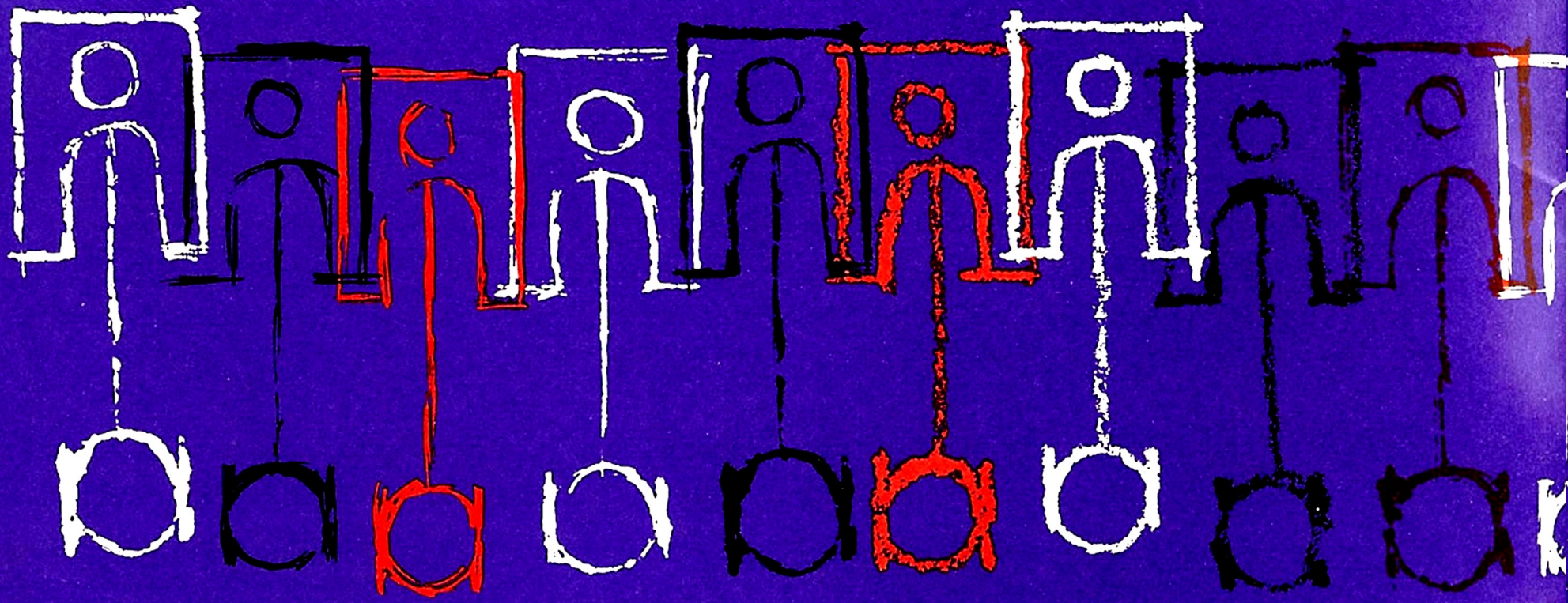


breaking in your new car for better performance



the key to proper break-in

If you want your new car to run better, longer, you will be interested in learning how Union Oil research engineers break in new cars for road-testing.

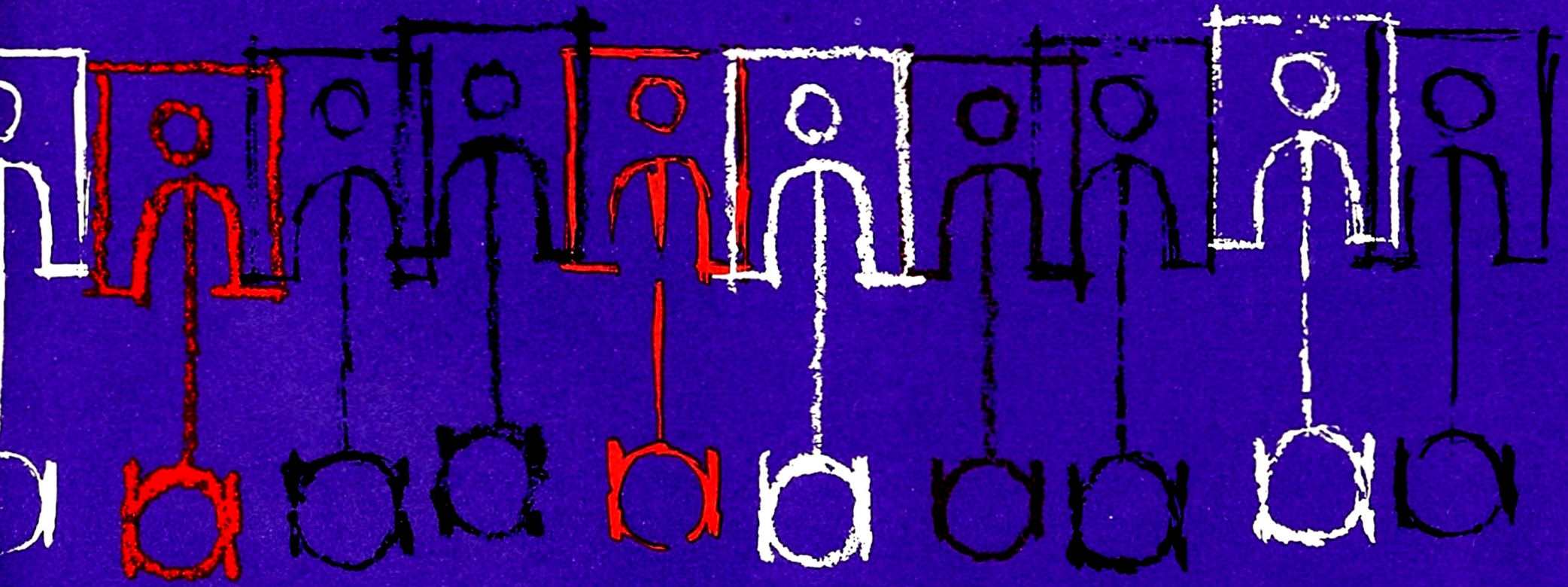
Their method, "*stepped-up whip-acceleration*," calls for an organized procedure of gradually stepping-up, and varying the car's speed. This is done in order to properly wear and polish the new moving metal parts in the engine until they fit closely and slide smoothly together.

They call this method "The Whip," which sounds pretty rough but agrees with car manufacturers' recommendations for getting the best performance out of present-day high-horsepower engines.

The important functions performed by *oil* between the moving parts in your new engine provide the key to proper break-in.

what happens in your new engine

The interaction between piston rings and cylinders illustrates the importance of proper break-in and lubrication. The pistons rush up and down inside the cylinders at terrific speed. If you were to

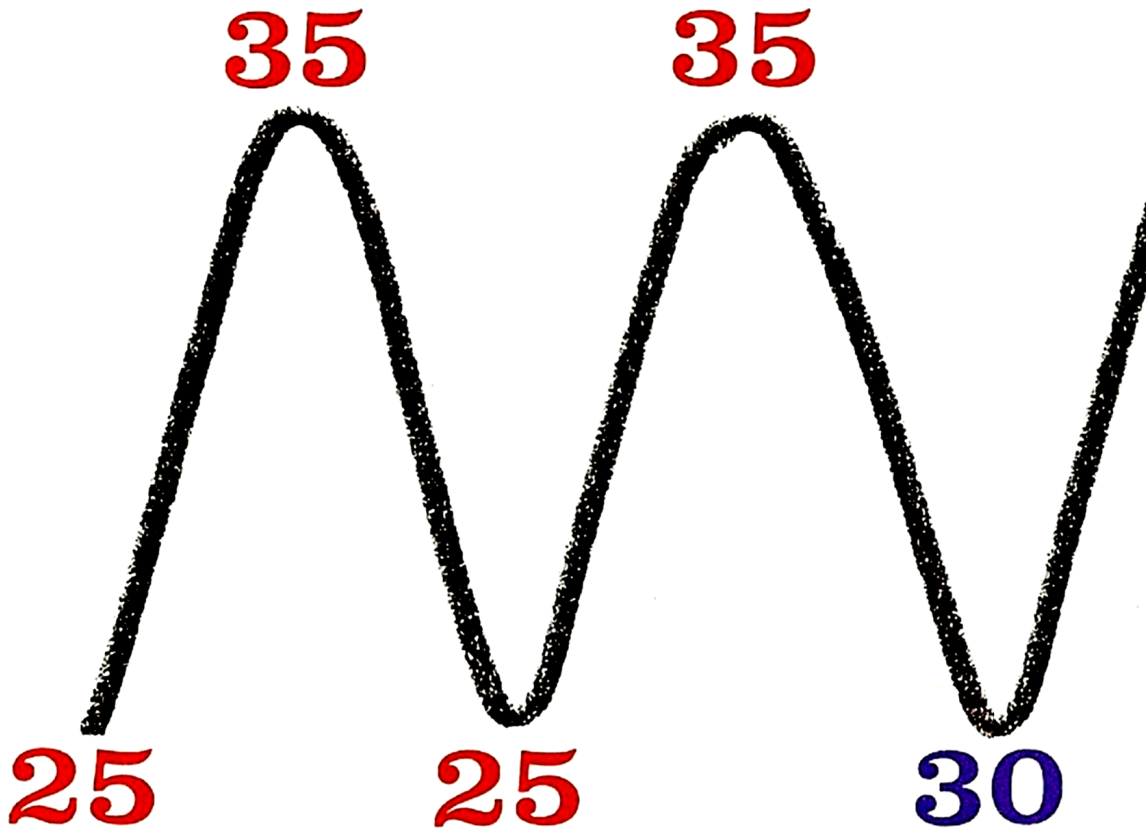


examine the surfaces of the piston rings and cylinders, they would appear to be smooth. But, magnified by a microscope there are high and low spots that look something like this:

Neither rings nor cylinders can be made perfectly round, therefore, they will be closer together at some points than at others:

The purpose of the break-in period is to polish down the rough spots, and fit wall and rings as closely as possible. Proper break-in leaves just enough space between adjacent engine parts to permit smooth sliding together, with only a thin film of oil separating them. If break-in is *not* properly done, your car may never deliver the power, speed, and economy of which it is capable.

For the same reason that they don't "baby" a rugged prizefighter in training, you don't "baby" today's high-powered engine. Present load-carrying oils, such as the Royal Triton family, have high film strength, and actually give so much protection that they tend to *retard* break-in, holding wear to a minimum. So while the car is new you must *make* the parts wear . . . but you must *control* the wear. That's where "The Whip" comes in.



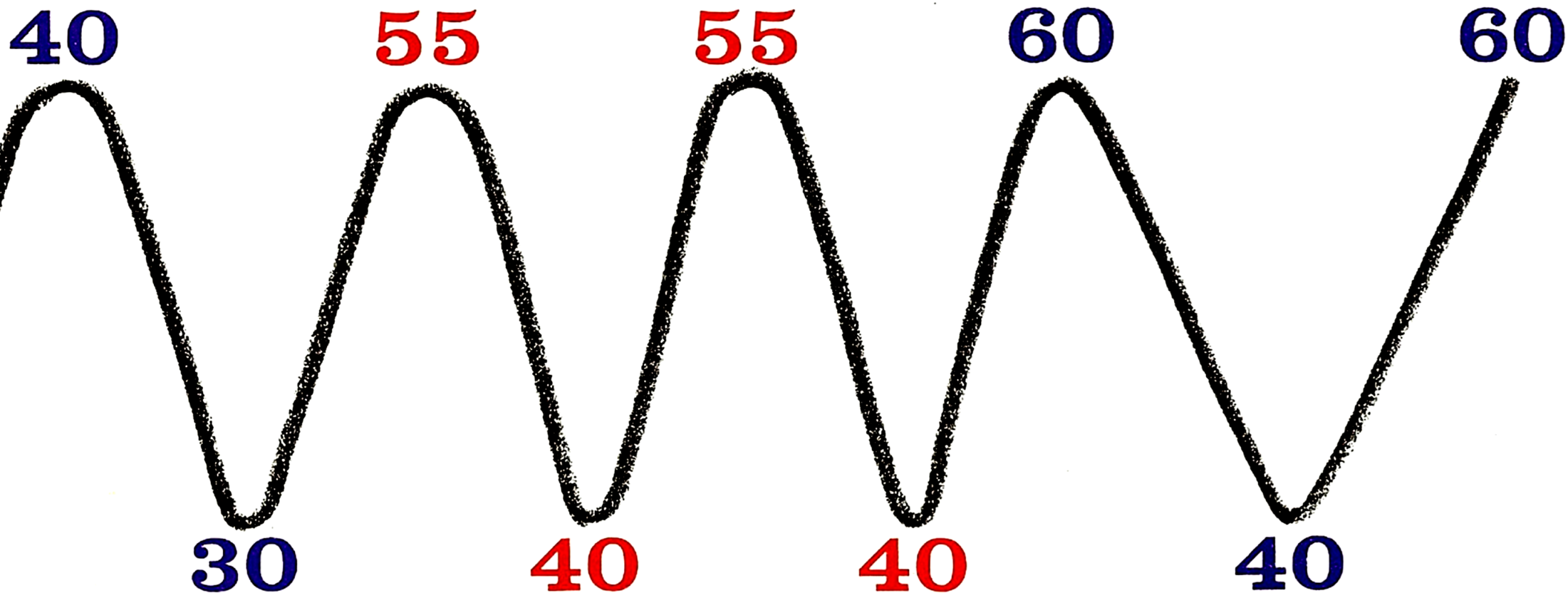
how "the whip" works

FIRST 100 MILES. Drive at about 25 miles per hour for 20 to 30 minutes, until the engine is well warmed up. This allows moving parts in the engine to expand uniformly to the proper operating clearances. "Whip" the speed up to 35 with *half-throttle* acceleration. At 35 take your foot off the gas pedal, and let the speedometer drop to 25, then up to 35, back to 25, 35, 25...

SECOND 100 MILES. Warm up the engine at 25 to 30 miles per hour. "Whip" the speed from *30 to 40* with half-throttle acceleration. 30 to 40, 30 to 40...

THIRD 100 MILES. Warm up at 30 to 40 miles per hour. "Whip" the speed from *40 to 55*, with *three-quarter throttle acceleration*, alternated with *half-throttle*.

FOURTH 100 MILES. Warm the engine at 30 to 40. "Whip" the speed from 40 to 55 or 60 (depending



on the speed limit) using *full-throttle* acceleration, then coast back to 40. Repeat this full-throttle acceleration every five minutes.

Here's what happens inside your engine: After the engine is warmed up, there is a thin film of oil between the cylinder walls and rings. When you "whip" the engine, the increased explosion pressure on the rings forces high spots on the rubbing surfaces through this oil film and some of the high spots are worn off. When you take your foot off the accelerator, car speed overruns engine speed, creating a strong vacuum in the combustion chamber. This tends to suck oil up past the rings, and helps polish the freshly worn spots. Your gentle half-throttle accelerations knock off the bigger burrs. Then, as you step up to higher speeds for the full-throttle whip, you remove more and more of the rough spots and high places until the rings and walls are mated and are perfectly smooth.

important "do's and don'ts"

DO warm up the engine at low *driving* speeds. Your engine warms best by *working*. Start the engine, allow a few seconds for the oil to circulate, then drive away. Extended idling, like extended high speed, is harmful to any engine.

DON'T use full-throttle during the first 200 miles.

DON'T exceed the manufacturers' recommended top speed for the first 500 miles.

DO keep the engine hot and running during the break-in period. If possible, plan three to four-hour trips with your new car. Driving the car home from the factory is a good way to break it in. Continuous driving wears in the engine under the best conditions.

DON'T drive for *long periods* at sustained high speeds. Unbroken high-speed driving, on long straightaways or steep grades, is not good for cars, new or old. Lift your foot occasionally, and let the engine ease off in order to get oil into the hard-working parts.

DO use premium gasoline during break-in, and afterwards, if your automobile requires it. "Knocking" is particularly harmful to a new engine. The explosive force behind the knock slams the piston rings against the cylinder walls, causing accelerated wear at the top of the cylinder.

the proper grade of oil is very important

When your new car comes from the factory its crankcase is filled with the correct viscosity, or grade, of oil for the break-in period. Your owner's manual tells you what grade to put in after that. The man-

ufacturer's recommendation will vary according to engine design, and local weather conditions.

A leading automobile manufacturer has stated, "In selecting the proper lubricating oil, it is essential to consider the reputation of the refiner." Union Oil Company is recognized as a world leader in the development of the finest motor oils. ROYAL TRITON will reduce wear, keep the engine clean and running like new longer, and provide increased power and performance.

If you demand the best lubricating oil that money can buy, use ROYAL TRITON 10-30. This multigrade oil meets all the viscosity requirements of SAE grades 10W, 20W, and 30. It flows like SAE 10W at 0°F. and like SAE 30 at 300°F. This remarkable flexibility of Royal Triton 10-30 makes it ideal for any car requiring SAE 30 oil or lighter. This oil exceeds, by a wide margin, all the requirements of automobile manufacturers' test sequences for "MS" service, the most severe service classification for automobile lubricating oil. It gives your engine maximum protection under all operating conditions. All major American automobile manufacturers endorse the use of multigrade oils.

change oil regularly

It is also important to drain and refill your car's crankcase regularly. Oil doesn't wear out but it does become contaminated with water, corrosive acids, unburned fuel, and sludge. The recommended drain-refill interval for average car use is every 30 days in winter, every 60 days in summer, but with never over 2,000 miles between changes. Royal Triton motor oil will give your engine greater protection and longer new-car life than any other oil you can buy.

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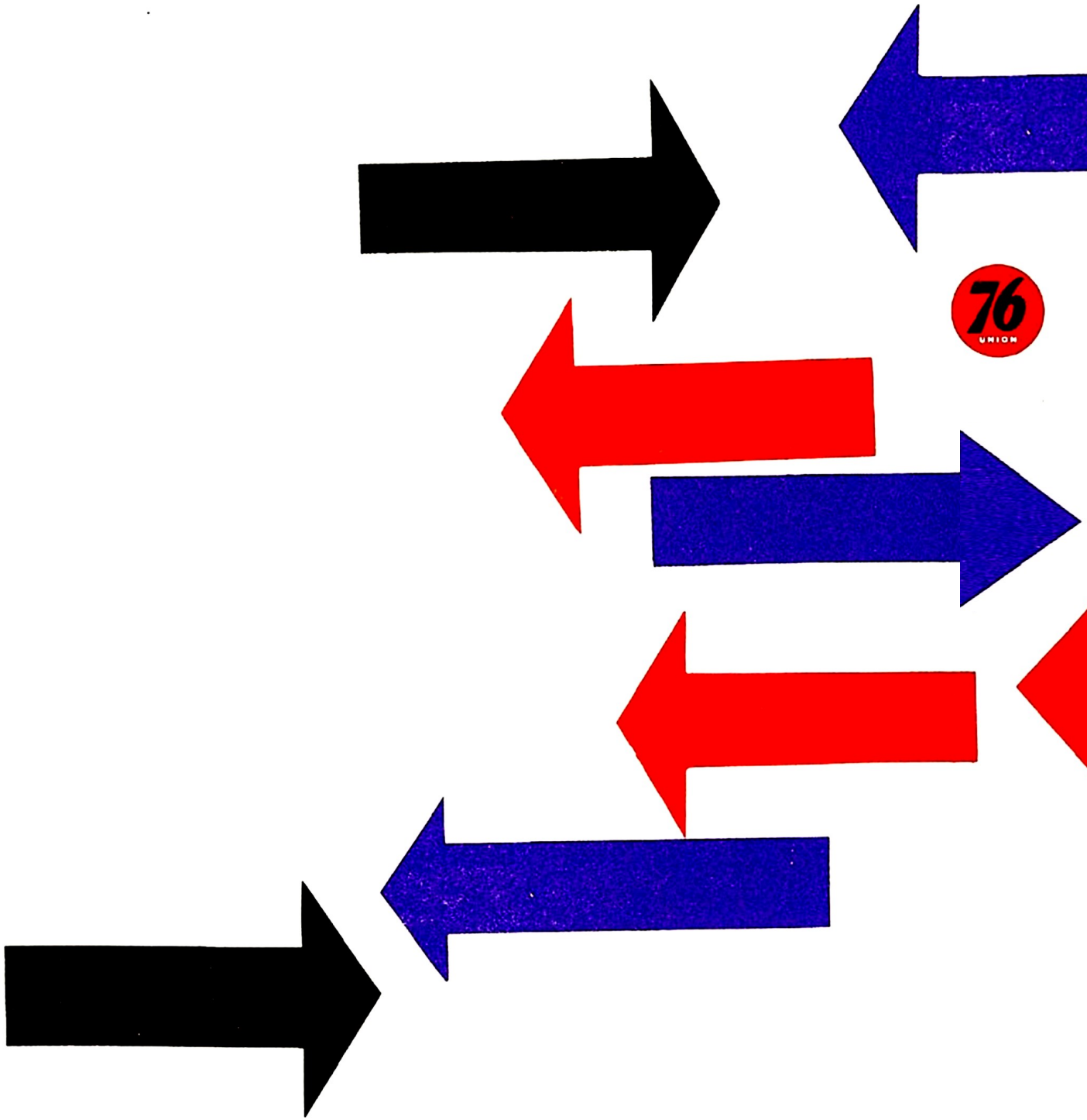

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